Comparing Decimals

Reporting Category Number and Number Sense
Topic Comparing and ordering decimals

Materials

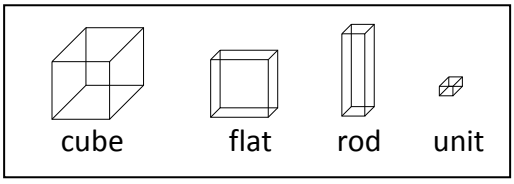
- Base-10 blocks (large cube, flats, rods, units)
- Decimal Grids (attached)
- Place-value charts
- Digit and decimal cards
- Comparing Decimals Recording Sheet (attached)
- Calculators
- Dice

Vocabulary

decimal, tenth, hundredth, thousandth, whole, compare, place value, value, digit, leading zero, decimal point, order, compare, least, greatest

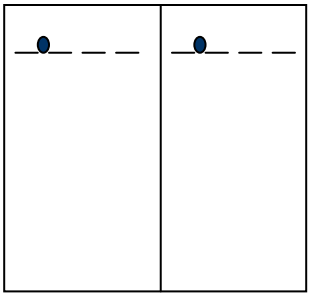
Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Have student partners use base-10 blocks and place-value charts to model different decimals. Each partner writes down in words the number he/she has modeled. One partner then writes the appropriate symbol, <, >, or =, while the other partner writes a sentence to describe the relationship between the two numbers: for example, "Two and sixty-four hundredths is greater than two hundred sixty-four thousandths." Have the students use the place-value chart to check the validity of the sentence. Then, have partners discuss how the models and the charts helped them compare the decimals.
2. Have students repeat the same activity, using decimal grids. Give students grids already colored in, and have them compare them. Remind them to always use the symbol and write the sentence, as this helps them to continue practicing reading and writing decimals.



3. Let partners use digit cards or dice to select digits randomly for placement on the place-value charts. This makes practice more of a game. Focus on comparing the digits with the greatest *value*. Many students may think that 0.217 is greater than 0.22 because it has more digits. Have them identify what 0.217 and 0.22 have in common (both have 2 tenths) and how they are different. Partners can work together, each typing a number into his/her calculator and then comparing the two numbers.

4. Have student partners play "The Greatest Decimal Game." One sheet of paper is cut in half vertically. Each player takes a half-sheet and draws four short, horizontal lines to show the places for each digit. The partners choose where the decimal will be placed before the game begins. Each player takes turns rolling a die and choosing where to put the digit shown. After each player has completed his/her number, the player with the largest number wins one point. If a player correctly reads his/her number, he/she wins an additional point.



Assessment

- **Questions**
  - Why is 0.348 less than 0.36?
  - Compare and contrast 0.820 and 0.82. Which decimal is larger? How do you know?
- **Journal/Writing Prompts**
  - Look through retail ads and find the costs of five items. Order the costs from greatest to least or least to greatest.
  - Record the decimal numbers you and your partner created in the "Greatest Decimal Game." Once you have recorded five decimal numbers, order them from least to greatest or greatest to least.
- **Other**
  - Have students take the same decimal numbers created in the game and round them to the nearest whole number, tenth, and hundredth.
  - Have students compare decimals shown on a calculator or written down. Make sure they are using the correct symbol and writing a sentence to explain what the symbol means.

Extensions and Connections (for all students)

- Working with a partner and a deck of cards, choose 3-5 cards (determined by the teacher) and create the largest/smallest decimal number you can and record your number in your journal or on a recording sheet. Use the appropriate symbol (>,<,=) and words to compare and order the decimals. Once you have recorded 5 decimal numbers, order them from least to greatest/greatest to least.
- Round each of the decimals to the nearest whole number, tenth, and hundredth.

Strategies for Differentiation

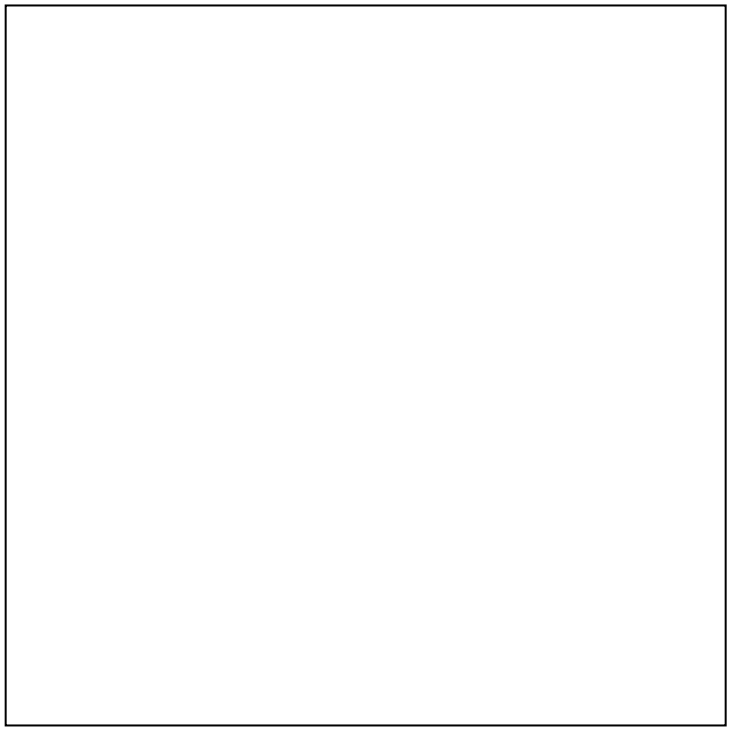
- Have students create a mnemonic or visual cue to remember the directions of the less than and greater than signs (e.g., alligator mouths).
- Have students use place-value pockets to display the numbers represented by the base-10 blocks.
- Have students use a word processing program or dictation software to write the sentences for instructional activities #1 and #2.
- Have students use cards with the symbols written on them for the comparison in instructional activities #1 and #2.
- Have students color-code the different symbols.
- Invite the school librarian to discuss the Dewey Decimal System.

- Have students use pipe cleaners or modeling clay to create the symbols <, >, and =.
- Have students use their bodies to create the different symbols.
- Have students work in small groups to compare numbers with decimals. Two students hold cards with decimal numbers written on them. Another student stands between the card-holding students and creates with his/her body the correct comparison symbol to make a true sentence. Another student reads the sentence aloud.
- Have students play the “Greatest Decimal Game” in pairs.

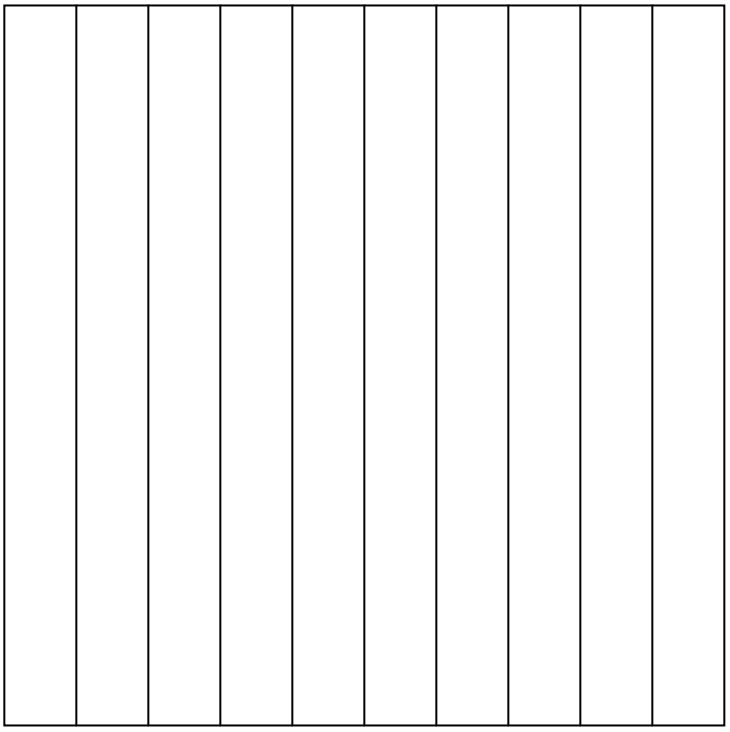
Decimal Grids

Name _____ **Date** _____

FLAT



RODS



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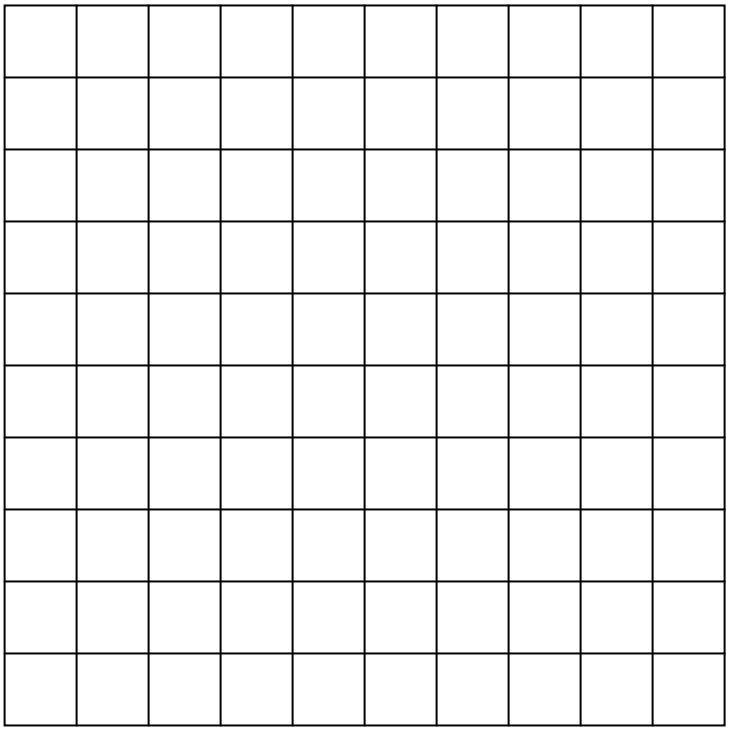

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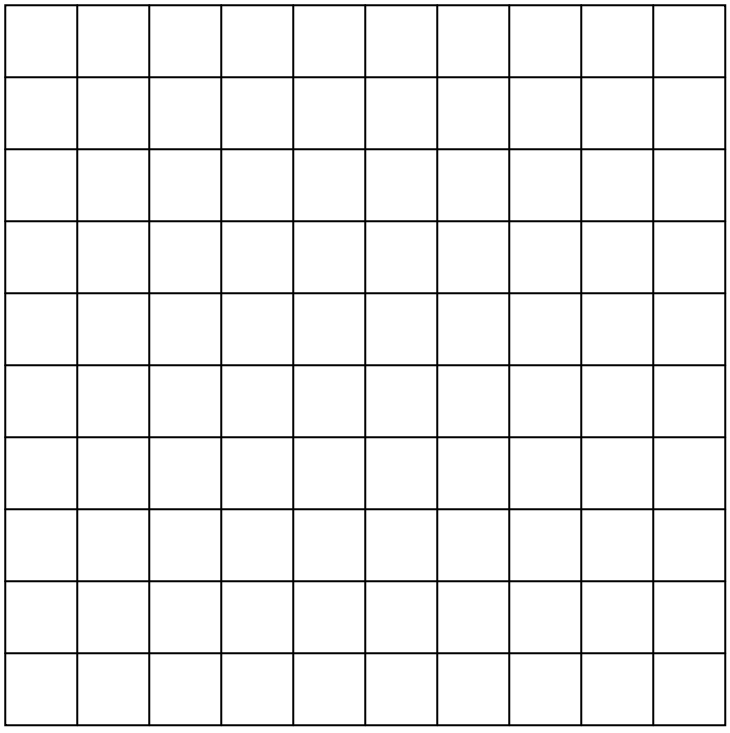

Comparing Decimals Recording Sheet

Place your decimal, and fill in the symbols >,<, or = to compare the decimal numbers you generate.

Player 1		Player 2
____ ____ ____ ____	◯	____ ____ ____ ____
____ ____ ____ ____	◯	____ ____ ____ ____
____ ____ ____ ____	◯	____ ____ ____ ____
____ ____ ____ ____	◯	____ ____ ____ ____
____ ____ ____ ____	◯	____ ____ ____ ____

Greatest to Least

_____, _____, _____, _____, _____

Least to Greatest

_____, _____, _____, _____, _____